

The background of the cover is a photograph of a space shuttle launch. The shuttle is angled upwards from the bottom left towards the top right. The white orbiter is attached to a white cylindrical external tank and a black solid rocket booster. The orbiter's nose cone is pointed towards the top right. The background is a bright blue sky with wispy white clouds. The overall composition is dynamic and emphasizes the theme of competition and long-term strategy.

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SELECTIVE DISCLOSURE: A STRATEGIC APPROACH TO LONG-TERM COMPETITION

THOMAS G. MAHNKEN

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Contents

EXECUTIVE SUMMARY	i
The Role of Information in Long-Term Competition	i
A Framework for Selective Disclosure	ii
Selective Disclosure: From Concept to Strategy	iii
Conclusion	iv
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: THE ROLE OF INFORMATION IN LONG-TERM COMPETITION	3
The Information Dimension of Long-Term Competition	5
CHAPTER 3: A FRAMEWORK FOR SELECTIVE DISCLOSURE	13
Standard Program	15
Classified Program	18
Selective Disclosure	27
CHAPTER 4: SELECTIVE DISCLOSURE: FROM CONCEPT TO STRATEGY	31
CHAPTER 5: CONCLUSION	35
LIST OF ACRONYMS	37

FIGURES

FIGURE 1: BASIC FRAMEWORK	14
FIGURE 2: STANDARD PROGRAM	15
FIGURE 3: B-1 LANCER	16
FIGURE 4: CLASSIFIED PROGRAM	18
FIGURE 5: HAVE BLUE	20
FIGURE 6: F-117 NIGHTHAWK	22
FIGURE 7: B-2 SPIRIT	24
FIGURE 8: DEMONSTRATION	27
FIGURE 9: XB-70 VALKYRIE	28

Executive Summary

Although the Department of Defense has rhetorically embraced the term “great power competition”, it has not yet adapted its thinking and its processes, let alone its budgeting and procurement priorities, to reflect the needs of the strategic environment. Decisions about what capabilities to reveal to achieve an intended strategic effect, how to reveal them, and when, as well as decisions regarding what to conceal and for how long play an important role in great-power competition. China and Russia have already selectively disclosed information about advanced capabilities to strategic effect against the United States and its allies. The U.S. government needs to think seriously about the role that selectively revealing or concealing information should play in defense strategy. The question of how the United States can gain the deterrent benefits of classified capabilities without suffering an unacceptable loss of operational effectiveness is a crucial one. Similarly, it is worth thinking about how the U.S. government can selectively reveal classified capabilities to induce favorable responses, such as the expenditure of resources on defensive efforts or countermeasures.

The Role of Information in Long-Term Competition

Five considerations should govern the development and implementation of a strategy for long-term competition, or competitive strategy. First, the strategy must be aimed at a concrete adversary with whom we interact. Indeed, an understanding of the competitor’s aims, strengths, weaknesses, preferences, and proclivities is central to strategic effectiveness.

Second, in order to develop, implement, and monitor a strategy, one must possess sufficient information to allow us to assess its effectiveness, or at the least to safeguard against undesirable second-order effects.

Third, an effective strategy should take into account (and even exploit) the basic but often overlooked fact that both sides in a competition possess constrained resources as well as the fact that each side in a competition is not a unitary actor, but rather a collection of bureaucratic entities, each of which has its own preferences, proclivities, and culture that frequently leads to performance that diverges considerably from the optimal.

Fourth, such a strategy should exploit time and make it a virtue. That is, it should consider not only *what* actions we should take, but also *when*, with the latter timed to achieve the maximum effect. Finally, such strategies should account for interaction. Strategy does not involve imposing one's will upon an inanimate object, but rather a thinking competitor that is pursuing its own aims.

One of the key sets of decisions that leaders have to make in peacetime or crisis is what capabilities to reveal to a competitor, when, and how, as well as what capabilities to conceal, and for how long. They face the decision as to whether to reveal military capabilities in order to deter or influence a competitor, or to conceal them. Sometimes these decisions are made explicitly; at other times they are made implicitly as the result of bureaucratic behavior and default preferences such as acquisition processes, security classification guidelines, or other standard operating procedures. Efforts to conceal capabilities seek to *delay* interaction with competitors, whereas efforts to reveal a capability may seek to *provoke* interaction. In particular, one may want to do this in order to take advantage of an adversary's proclivities or tendencies.

Developing military capabilities in secret has long been a part of war and statecraft. States intentionally conceal capabilities that provide "perishable" capabilities in order to preserve their wartime operational effectiveness and to inflict surprise on the battlefield. However, concealing capabilities often involves financial and operational costs. By contrast, states may intentionally reveal capabilities in order to deter or provoke a response. Ways to do so include public speeches, parades, flyovers, news stories, intentional displays to commercial or military satellites, displays at arms shows, and "leaked" press stories. However, bureaucratic politics and organizational culture can complicate efforts to conceal or reveal capabilities purposefully. Weapons programs involve various communities with divergent interests that can breed tension and frustration and render unified action difficult. It is only at the highest levels of leadership — for example, at the level of the Secretary of Defense or of the Service Secretaries — that these divergent considerations can be weighed and balanced.

A Framework for Selective Disclosure

There are three models of capability development. Standard programs are initiated in public and are unveiled when they are initiated. Seen from the perspective of an adversary, a standard program offers a target that is visible from the beginning and gradually comes into sharper focus as the program proceeds through development into acquisition and then deployment. Absent successful espionage adversaries are able to react decisively after deployment, and most likely after employment or compromise.

A classified program seeks to conceal the development of a system or key features of it in order to preserve a future operational advantage, delay an adversary response, and temporarily suspend interaction. Most classified programs are initiated in secret and only unveiled later; in some cases, a program may be launched openly and subsequently classified, as was the case

with U.S. research on stealth. In either case, a classified program involves both an initial decision to conceal a capability (rather than treating it like a regular program) and a subsequent decision to reveal it. The net effect of security measures is to deny an adversary actionable information and thus delay its ability to develop effective countermeasures.

Whereas a classified program seeks to conceal a capability to delay response, selective disclosure seeks to use the revelation of a new capability to induce an adversary reaction or provoke a response. Selective disclosure can involve a single, discrete capability, or it can be cumulative, designed to provoke confusion, impose costs, and trigger disassociated adversary responses. Selective disclosure can also involve the overt demonstration of new capabilities. A demonstration may allow a state to gain some of the benefits of new technologies before a deployable capability is available. In other cases, a state may exploit technologies that will never be deployed, but may provoke a desired response or investment from an adversary. Seen from an adversary's perspective, a demonstration can appear like the unveiling of a classified program or the emergence of a new standard program.

One can think of several families of demonstrations. These include demonstrations that are geared to signaling the advent of new capabilities as well as the intent to use them; "dead ends," which seek to induce an adversary to go down a technologically or operationally unproductive path; and "divestitures", which try to get maximum value from a capability of waning utility.

Selective Disclosure: From Concept to Strategy

When should leaders conceal a capability? When, conversely, should they reveal a capability to strategic effect? Several criteria suggest themselves. One is the importance the competitor attributes to the capability. Is it likely, from the competitor's perspective, to alter the military balance in an unfavorable way? Or does its existence make little to no difference?

A second has to do with the competitor's bureaucratic response to the newly-revealed capability. A third is the speed with which a competitor can counter the capability. A fourth, related, consideration is the amount of effort a competitor would have to expend to counter the capability. A final consideration has to do with how quickly and easily the state developing the capability can take the next step in the competition.

These criteria, combined with the above discussion, suggest several potentially fruitful opportunities for the United States to reveal or demonstrate new capabilities. Suggestive examples include the following:

- **Reveal the existence of a capability that has already been developed and deployed.** The primary benefit here would be to force competitors to re-assess the military balance and also create uncertainty as to what other deployed capabilities the United States possesses that have yet to be revealed. For example, it might make sense to reveal

the ability to connect platforms, weapons, and sensors in novel and unexpected ways that create uncertainty and complicate an adversary's planning.

- **Reveal the existence of a novel concept of operations for employing existing capabilities.** As above, the primary benefit of this approach would be to force competitors to boost their assessment of U.S. military effectiveness and enhance deterrence. It might make sense, for example, to employ multiple long range anti-ship missiles, or LRASM, from a B-2 bomber to demonstrate the ability to rapidly strike naval targets in contested areas such as the Taiwan Strait. Similarly, it might make sense for bombers or unmanned aircraft systems (UAS) to demonstrate the ability to defend themselves against air-to-air threats.
- **Suggest the development of a capability that doesn't yet exist (or may not exist at all) to complicate enemy planning, undermine their confidence, and bolster deterrence.** For example, it might make sense to suggest a breakthrough that would affect a key military balance, such as the relationship between offense and defense or hiding and finding. It might also make sense to suggest developments in areas of science and technology that are poorly understood to create uncertainty and impose costs.
- **Reveal the existence of a capability that is further in its development than previously imagined.** The primary benefit of this approach would be to compress the time dimension of competition and provoke a competitor response in order to impose costs. For example, disclosing advances in autonomy, hypersonics, or directed energy might have such an impact.
- **Reveal the existence of a capability that was developed, but is obsolete or a technological "dead end".** The primary benefit of this approach would be to use previously "sunk costs" with little further utility to provoke a competitor's response in order to impose costs. It seems likely that the Defense Advanced Research Projects Agency (DARPA) and the Service laboratories likely have a stockpile of terminated projects that could be drawn upon for these purposes.
- **Conceal several capabilities that are either more or less promising than previously imagined.** The primary benefit of this approach would be to introduce uncertainty to a competitor about prioritizing responses, or add uncertainty about potential operational concepts that could be imagined, but may not be feasible for a long time.

Conclusion

There are a number of topics that merit further exploration. First, it would be worthwhile to explore in depth historical case studies of the selective disclosure of information. Such case studies would likely reveal the barriers to purposely concealing or revealing capabilities.

Second, it would be worthwhile to explore in depth contemporary Chinese and Russian efforts to strategically disclose information about new capabilities. Understanding how Beijing and Moscow are using the selective disclosure of new capabilities can help the United States and its allies develop better strategies to compete. Studying competitors deeply may also help inject some healthy skepticism regarding purported capabilities that appear to be (and in fact may actually be) “too good to be true” to avoid the United States and its allies diverting their limited resources to countering these exaggerated threats.

Third, it would be useful to understand the behaviors we hope to induce in our competitors, and those we hope to avoid inducing. Where, in other words, could the selective disclosure of capabilities be used fruitfully, and where should it be avoided?

Fourth, it would similarly be useful to understand those things that our competitors are most concerned about in order to determine how best we can leverage those fears to induce the behavior we seek.

Finally, it would be worth exploring how concealing or revealing information could best serve as an element of a U.S. strategy to compete with China and Russia over the long term. What capabilities should be protected to preserve their operational effectiveness? What capabilities that are currently concealed should be disclosed to enhance deterrence or provoke a response? What capabilities should the United States demonstrate to strategic effect? How, when, and in what ways should these and other capabilities be demonstrated to yield the greatest strategic effect?

Although the topic deserves greater study, some illustrative areas suggest themselves. It might be strategically advantageous for the United States if competitors:

- Believe we have a substantial capability to strike key targets. To that end, it might make sense to demonstrate combinations of platforms and weapons that would hold at risk and complicate the defense of high-value targets.
- Worry about the defense of key targets in their hinterlands, causing them to channel investment into territorial defense, thus diverting forces and investment from their periphery. To achieve that, it might make sense to demonstrate an increased capability to hold at risk more or a wider range of targets in an adversary's interior.
- Worry about the security of their nuclear deterrent, leading them to channel investment away from conventional forces into reinforcing their second-strike capability. As part of this, it might make sense to demonstrate the ability to hold at risk a competitor's strategic forces and nuclear command, control, and communications.

History suggests that it is possible to conceal or reveal capabilities selectively to strategic effect. That having been said, history also shows that there are barriers, particularly organizational, bureaucratic, and cultural ones, to purposeful strategic action. In practice, a program to conceal or reveal information for strategic effect would require several things. It would, for

example, benefit from an understanding of a competitor's bureaucracy that is targeting the United States, as well as their state of knowledge of U.S. programs. Given our limited understanding of China and Russia today relative to the Soviet Union during the late Cold War, it would require a dedicated intelligence and analysis effort to develop the information necessary to assess decisions to reveal or conceal capabilities against the five criteria discussed above. It would also be important to develop channels to reveal capabilities that would be credible to the competitor. There would also need to be a framework for assessing the risks and costs of revealing new capabilities, to include a competitor's possible responses to the revelation. The effort would also require considerable coordination among a diverse set of bureaucratic actors. All are possible but will require effort to achieve, and in no way is success guaranteed.

Chapter 1

Introduction

For the foreseeable future, the United States will be engaged in multi-dimensional competitions with China and Russia. Although the Department of Defense has rhetorically embraced the term “great-power competition” as its guiding principle and even published a joint doctrine note defining “competition,” the process of accommodating the reality of the current security environment is incomplete.¹ The Defense Department has in many ways yet to adapt its thinking and its processes, let alone its budgeting and procurement priorities, to reflect the needs of long-term competition. Understanding and acting in the information dimension is one area where new thinking is needed.

Since World War II, the United States has relied upon gaining and maintaining a qualitative edge over its adversaries. Moreover, it has historically relied upon classified capabilities to deliver a warfighting advantage. Some are kept secret during their development, and some remain classified after—sometimes long after—they are deployed or even retired. However, to the extent that competitors have little to no understanding of our classified capabilities, their assessments of the military balance with the United States will be distorted. Specifically, to the extent they discount real but classified capabilities, they may be unduly confident in their prospects of success on the battlefield, perhaps even to the extent that they would be emboldened to use force against the United States.² At the same time, we may be able to bolster deterrence by suggesting the existence of capabilities that may not yet exist.

Decisions about what capabilities to reveal to achieve an intended strategic effect, how to reveal them, and when, as well as decisions regarding what to conceal and for how long play an important role in great-power competition.³ China and Russia have already selectively

1 Joint Doctrine Note 1-19, *Competition Continuum* (Washington, D.C.: Joint Staff, 2019).

2 For an earlier discussion of this, see Kevin N. Lewis, *Getting More Deterrence Out of Deliberate Capability Revelation* (Santa Monica, CA: RAND Corporation, 1989).

3 See, for example, Brendan Rittenhouse Green and Austin Long, “Conceal or Reveal? Managing Clandestine Military Capabilities in Peacetime Competition,” *International Security* 44, no. 3 (Winter 2019/20): 48-83.

disclosed information about advanced capabilities to strategic effect against the United States and its allies. The People's Liberation Army long concealed its development of new capabilities as part of a strategy of "hide and bide" in order to forestall a concerted response.⁴ More recently, the Chinese government has shifted to a strategy based upon displaying new capabilities, as it did in 2015 when it paraded the DF-21D anti-ship ballistic missile (ASBM) and DF-26 "Guam killer" intermediate range ballistic missile (IRBM) in public for the first time. It did so again on October 1, 2019, when it unveiled a host of new weapon systems in the parade marking the 70th anniversary of the founding of the People's Republic of China, including the DF-41 intercontinental ballistic missile (ICBM), the JL-2 submarine-launched ballistic missile (SLBM), the DF-17 missile equipped with a hypersonic glide vehicle, and previously undisclosed unmanned aerial vehicles and cruise missiles.⁵ The Russian government has similarly selectively disclosed the existence of new capabilities for political effect, such as when Russian President Vladimir Putin unveiled a panoply of new nuclear delivery vehicles, complete with digital animation, in his March 1, 2018 State of the Union address.⁶

The U.S. government needs to think seriously about the role that selectively revealing or concealing information should play in defense strategy. The question of how the United States can gain the deterrent benefits of classified capabilities without suffering an unacceptable loss of operational effectiveness is a crucial one. Similarly, it is worth thinking about how the U.S. government can selectively reveal classified capabilities to induce favorable responses, such as the expenditure of resources on defensive efforts or countermeasures. How can we balance the value gained from revealing capabilities against the costs of doing so? This is particularly challenging given that the risks and costs of disclosure are likely to weigh more heavily in the balance than the hypothetical benefits of doing so.⁷

This report begins by discussing the role of information in long-term competition. It goes on to outline a taxonomy of different types of weapons programs. It then discusses criteria for deciding to conceal or reveal a capability before concluding with recommendations for future research and action.

Although this report deals in part with the topic of classified programs, it does so exclusively through open-source documents, including declassified historical documents. I make no judgment about the veracity of these sources. Indeed, the veracity of any particular source is secondary to the report's arguments about the information dimension of competition.

4 Aaron L. Friedberg, *A Contest for Supremacy: China, America, and the Struggle for Mastery in Asia* (New York: W.W. Norton, 2011), chapter 6.

5 Andrew Tate and Samuel Cranny-Evans, "China Displays New Platforms, Weapon Systems in Large Military Parade," *Jane's Defense Weekly*, October 1, 2019.

6 Dave Majumdar, "Russia's Nuclear Weapons Buildup is Aimed at Beating U.S. Missile Defenses," *The National Interest*, May 1, 2018, available at <https://nationalinterest.org/print/blog/the-buzz/russias-nuclear-weapons-buildup-aimed-beating-us-missile-24716> (accessed August 20, 2019).

7 For a discussion of this challenge, see Kevin N. Lewis, *Getting More Deterrence Out of Deliberate Capability Revelation* (Santa Monica, CA: RAND Corporation, 1989), 4.

CHAPTER 2

The Role of Information in Long-Term Competition

It is necessary to understand the overall context of long-term competition before focusing upon the selective disclosure of capabilities as an element of competitive strategy.

Five considerations should govern the development and implementation of a strategy for long-term competition, or competitive strategy.⁸ First, the strategy must be aimed at a concrete adversary with whom we interact. Indeed, an understanding of the competitor's aims, strengths, weaknesses, preferences, and proclivities is central to strategic effectiveness.

Second, in order to develop, implement, and monitor a strategy, we must possess sufficient information to allow us to assess its effectiveness, or at the least to safeguard against undesirable second-order effects. As described below, developing and implementing a competitive strategy is predicated upon at least a first-order understanding of our own enduring strengths and weaknesses, and those of the competitor. This is necessary to ensure a reasonable chance that one's actions will elicit the response that one seeks, or at least to narrow the range of potential competitor responses.

The information requirements of successful strategy should not be underestimated. During the Cold War, the United States national security bureaucracy, including the intelligence community, was almost singularly focused on the Soviet Union; the U.S. government and philanthropic foundations undertook a wide variety of programs to build intellectual capital regarding it.⁹ For example, the Ford Foundation sponsored a program that cross-trained experts in Soviet and strategic studies. The United States collected and translated Soviet

8 Thomas G. Mahnken, "Frameworks for Examining Long-Term Strategic Competition Between Major Powers" in Tai Ming Cheung and Thomas G. Mahnken, eds., *The Gathering Pacific Storm: Emerging U.S.-China Strategic Competition in Defense Technological and Industrial Development* (Cambria University Press, 2018), pp. 24-27.

9 David C. Engerman, *Know Your Enemy: The Rise and Fall of America's Soviet Experts* (Oxford: Oxford University Press, 2009).

military writings and made them widely available to the U.S. officer corps.¹⁰ U.S. intelligence organizations undertook a range of sometimes highly risky operations to gain deep insight into Soviet decision-making.¹¹ Despite all these efforts, it took decades for the United States to gain a deep and nuanced understanding of Soviet decision-making.

Today, there is no comparable effort to understand China or Russia, even though both are in many ways much more open than the Soviet Union was. For example, whereas Soviet writings about future warfare were often classified, some Chinese doctrinal publications are available for purchase in bookstores in China and on the Internet. However, whereas the U.S. government translated and disseminated Soviet writings on warfare, comparable Chinese doctrinal publications are not broadly available. As a result, discussion of Chinese doctrine is often limited to the small subset of defense analysts who are fluent in Mandarin. Even more egregious, given its previous investments, the United States drew down its stock of intellectual capital on the Russian military after the end of the Cold War. The result has been the emergence of dangerous blind spots, confusion of continuity for novelty, and repeated strategic surprise.

Third, an effective strategy should take into account (and even exploit) the basic but often overlooked fact that both sides in a competition possess constrained resources. Indeed, the fact of limited resources — monetary, human, and technological — and the costs associated with them is central to cost-imposing strategies. Similarly, an effective strategy should take into account the basic fact that each side in a competition is not a unitary actor, but rather a collection of bureaucratic entities, each of which has its own preferences, proclivities, and culture that frequently leads to performance that diverges considerably from the optimal.

This insight applies to both sides. To be successful, a strategy must navigate one's own bureaucratic terrain before it has a hope of affecting a competitor's bureaucracy. Put another way, strategies that rely upon one's own military services doing things that they do not want to do are unlikely to succeed. Conversely, strategies that match the preferences and proclivities of one's own military to the competitor are more likely to be successful.

Fourth, such a strategy should exploit time, and make it a virtue. That is, it should consider not only *what* actions we should take, but also *when*, with the latter timed to achieve the maximum effect. Time costs are important, and may translate into deterrent effects. Cost-imposing strategies, in concert with strategies of denial, should seek to frustrate and delay competitors from achieving capabilities that are dangerous and disruptive. For example, the United States, our allies, and our friends might consider deploying anti-access capabilities of their own, such as land-based anti-ship missiles, to constrain Chinese attempts to

10 During the 1960s and 1970s, the U.S. Air Force translated and published a series of Soviet doctrinal works. See, for example, A.A. Sidorenko, *The Offensive: A Soviet View* (Washington, D.C.: Government Printing Office, 1970).

11 Christopher Ford and David Rosenberg, *The Admirals' Advantage: U.S. Navy Operational Intelligence in World War II and the Cold War* (Annapolis, MD: U.S. Naval Institute Press, 2005).

project power.¹² Such an approach would, for example, help Taiwan deter Chinese coercion and aggression.¹³

Finally, such strategies should account for interaction. Strategy does not involve imposing one's will upon an inanimate object, but rather a thinking competitor that is pursuing its own aims. Competitors will respond to our moves, often at times and in ways that we may not expect. Indeed, they should be expected to seek to drive the competition in ways they perceive will favor them and disfavor us. Moreover, interaction is likely to be complex. Leaders are likely to pay attention to a mixture of external and internal developments. Their focus will be selective, and their grasp of external developments mediated by strategic culture, ideology, and incomplete and sometimes inaccurate information. What is more, their responses will be conditioned by organizational culture, bureaucratic politics, and standard operating procedures.¹⁴

For planning purposes, it is useful to think of a competition as an interactive three-move sequence made up of our initial action, our competitor's responses to it, and our subsequent counter-action, all of which are cumulatively aimed at achieving a desired objective, outcome, or effect. Our initial action should seek to elicit a response from our adversary — to dissuade him from undesirable actions or channel his behavior in ways that are favorable to us. We should undertake that action with at least a first-order sense of how the competitor may (or perhaps must) respond. However, the actual nature and timing of the competitor's response will give us additional information about the competition and should make our subsequent counter-action even more effective. Indeed, that counter-action should take account, and advantage, of our competitor's response.

The Information Dimension of Long-Term Competition

Peacetime competition takes place in the context of a fundamental asymmetry in information. On the one hand, we have a deep understanding of the capabilities and limitations of our current forces. We also have insight into the capabilities we seek to acquire in the future as well as their state of development. That is, we can estimate what future capabilities we will

12 Toshi Yoshihara, "Japan's Competitive Strategies at Sea: A Preliminary Assessment" in Mahnken, *Competitive Strategies for the 21st Century*, 219-235.

13 William S. Murray, "Revisiting Taiwan's Defense Strategy," *Naval War College Review* 61, no. 3 (Summer 2008), 13-38.

14 Thomas G. Mahnken, "Arms Races and Long-Term Competition," in Thomas G. Mahnken and Dan Blumenthal, eds., *Strategy in Asia: The Past, Present, and Future of Regional Security* (Palo Alto, CA: Stanford University Press, 2014); and Thomas G. Mahnken, "Introduction to Part III," and "Armaments Developments Since the Cold War," in Thomas G. Mahnken, Joseph A. Maiolo, and David Stevenson, eds., *Arms Races in International Politics from the Nineteenth to the Twenty-First Century* (Oxford: Oxford University Press, 2016).

possess, and when.¹⁵ By contrast, we understand only imperfectly our competitor’s current capabilities and have even less insight into their future plans and likely ability to execute them.

One of the key sets of decisions that leaders have to make in peacetime or crisis is what capabilities to reveal to a competitor, when, and how, as well as what capabilities to conceal, and for how long. They face the decision as to whether to reveal military capabilities in order to deter or influence a competitor, or to conceal them.¹⁶ Concealing capabilities may preserve or increase the operational effectiveness of these capabilities in a future conflict, but may reduce their impact on competitor decision-making. As George Keyworth, President Ronald Reagan’s science advisor, put it, “There’s no deterrence in a black program.”¹⁷

Sometimes these decisions are made explicitly; at other times they are made implicitly as the result of bureaucratic behavior and default preferences such as acquisition processes, security classification guidelines, or other standard operating procedures.

Decisions to conceal or reveal capabilities influence the time dimension of competition and patterns of interaction. For example, one of the objectives of concealing a new capability could be to make competitors believe that it doesn’t exist or that it is merely theoretical future possibility, thus rendering unnecessary the need to devote near-term resources to counter it. In other words, efforts to conceal capabilities seek to *delay* interaction with competitors. Conversely, one of the objectives of revealing a capability, particularly one that is in development or testing, could be to make competitors believe that its deployment is imminent, thus creating the need to counter it. That is, efforts to reveal a capability may seek to *provoke* interaction. In particular, one may want to do this to take advantage of an adversary’s proclivities or tendencies.

Decisions to conceal or reveal capabilities can also affect perceptions of military balances. Successfully concealing capabilities may cause a competitor to underestimate a nation’s military strength. Alternatively, establishing a track record of successfully concealing and then revealing capabilities could also create a reputation for having additional concealed capabilities, thus instilling caution in an adversary.

Concealing

Developing military capabilities in secret has long been a part of war and statecraft. States intentionally conceal capabilities that provide “perishable” capabilities in order to preserve

15 That having been said, our estimates of our own future capabilities are often overly optimistic. “Daniel Kahneman: Beware the ‘Inside View,’” McKinsey Quarterly, November 1, 2011, available at <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/daniel-kahneman-beware-the-inside-view> (accessed September 8, 2020).

16 A parallel dilemma involves whether to conceal or reveal knowledge of a competitor’s weaknesses. For example, President John F. Kennedy called Nikita Khrushchev’s bluff by letting him know that the United States was aware that it was ahead of the Soviet Union in the development and deployment of ballistic missiles.

17 Peter Westwick, *Stealth: The Secret Contest to Invent Invisible Aircraft* (Oxford: Oxford University Press, 2020), p. 170.

their wartime operational effectiveness and to inflict surprise on the battlefield.¹⁸ In particular, militaries will want to conceal capabilities that contain inherent vulnerabilities that require minimal time or cost to counter in order to minimize the possibility that they will be compromised. They also conceal capabilities that represent technological breakthroughs that they do not want others to emulate or to preserve technology “generational” advantages.

Militaries also seek to conceal capabilities in order to inflict uncertainty and surprise upon their adversaries. Technological surprise is valued even though it has rarely if ever proven decisive in warfare.¹⁹ Even if not critical, however, surprise temporarily suspends strategic interaction: The victim of surprise is “stunned,” ceases to be a reactive adversary and becomes, at least for a time, the equivalent of an inanimate object upon which the surpriser can inflict its will.²⁰

Concealing capabilities often, however, entails considerable costs. Some are financial: the mechanisms and procedures required to keep a program secret can cost a great deal. They include the cost of security investigations, storing and tracking classified documents and maintaining classified computer networks, and other procedures. For example, maintaining the secrecy of the F-117 Nighthawk stealth aircraft throughout its development and for the first years of its operational deployment reportedly required extensive, and costly, security measures.²¹

Concealing new capabilities is becoming more challenging. Today it involves not only concealing its existence from foreign intelligence services, but also from commercial imagery satellite networks, amateur-space watchers, and military buffs. And in an age where every iPhone contains a high resolution still and video camera, the ability to capture and disseminate imagery of “secret” programs has grown, as well as the ability more easily to piece together disparate information to make informed speculation.

Capabilities developed in secret may also yield operational costs. It may, for example, prove difficult to integrate highly classified capabilities into existing doctrine and organizations and to train with them to achieve proficiency. If new capabilities are kept hidden for too long, operators may not be proficient in using them. To cite but one example, the French armed forces developed the *mitrailleuse*, an early variety of machine gun, in the utmost secrecy in the

18 Richard K. Betts, *Surprise Attack: Lessons for Defense Planning* (Washington, D.C.: Brookings Institution, 1982); Barton Whaley, *Stragem: Deception and Surprise in War* (Boston: Artech House, 2007).

19 Michael I. Handel, “Technological Surprise in War,” *Intelligence and National Security* 2, no. 1 (January 1987).

20 James J. Wirtz, “Theory of Surprise,” in Richard K. Betts and Thomas G. Mahnken, editors, *Paradoxes of Strategic Intelligence: Essays in Honor of Michael I. Handel* (London: Frank Cass, 2003), 101-116.

21 Westwick, p. 111-112; Tyler Rogoway, “Keeping Stealth Stealthy: The F-117’s Secret Life at Tonopah Test Range Airport,” *Jalopnik*, December 15, 2015, <https://foxtrotalpha.jalopnik.com/keeping-stealth-stealthy-the-f-117s-secret-life-at-ton-1747371730> (accessed January 2, 2020).

1860s. The secrecy under which it was developed limited opportunities to figure out how best to use it and as a consequence, its impact on the Franco-Prussian War was minimal.²²

Finally, as viewers of the classic film *Dr. Strangelove* will know, capabilities that are concealed by definition cannot deter. The real-life Soviets might have learned from their fictional counterparts: Moscow fielded its own version of the Doomsday Machine, the *Perimetr* system, but failed to disclose its existence for some time.²³ Conversely, the U.S. Air Force decided to declassify the existence of the previously secret Geosynchronous Space Situational Awareness Program, or GSSAP, whose satellites have the ability to monitor satellites in geosynchronous orbit, in part to deter malicious activities against U.S. satellites.²⁴

Revealing

By contrast, states may intentionally reveal capabilities in order to deter or provoke a response. Revealing previously classified capabilities may introduce uncertainty into a competitor's strategic calculations, making him less confident in his understanding of our forces and potentially even overestimating our capability. Such an effort would reduce the competitor's confidence in its intelligence system and the effectiveness of counter-measures.²⁵ In particular, it may make sense to reveal a new capability in order to demonstrate the ability to deny an adversary its ability to launch an act of aggression (deterrence through denial) or punish it for aggression (deterrence through punishment). It may also make sense to reveal a new capability in order to force a competitor to respond, particularly if that response will be costly and unproductive. Revealing new capabilities can thus be a key element of a strategy of cost imposition.²⁶

States face the choice of when to reveal a capability: in peace, during crisis, or at war. That having been said, crisis dynamics and the fog and friction of war make revealing capabilities during crisis or in wartime problematic. Even more fundamentally, the unveiling of a new capability in crisis or war is unlikely to override the political imperatives driving conflict. Revealing capabilities in peacetime, by contrast, is likely to be more effective.²⁷

22 Michael Howard, *The Franco-Prussian War* (London: Routledge, 1961), 36.

23 David E. Hoffman, *The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy* (New York: Anchor, 2010).

24 Schriever Air Force Base, "GSSAP and ANGELS Contribute to Space Neighborhood Watch," July 24, 2014, available at <https://www.schriever.af.mil/News/Article-Display/Article/735868/gssap-and-angels-contribute-to-space-neighborhood-watch/> (accessed January 4, 2020).

25 Kevin N. Lewis, *Getting More Deterrence Out of Deliberate Capability Revelation* (Santa Monica, CA: RAND Corporation, 1989), 5, 29.

26 Thomas G. Mahnken, *Cost-Imposing Strategies: A Brief Primer* (Washington, D.C.: Center for a New American Security, 2014).

27 For more on this, see the discussion in Brendan Rittenhouse Green and Austin Long, "Conceal or Reveal? Managing Clandestine Military Capabilities in Peacetime Competition," *International Security* 44, no. 3 (Winter 2019/20): 56; Kevin N. Lewis, *Getting More Deterrence Out of Deliberate Capability Revelation* (Santa Monica, CA: RAND Corporation, 1989), vi.

There are also different ways to reveal new capabilities, including:

- **Public speeches:** As noted above, Russian president Vladimir Putin disclosed the existence of a handful of new nuclear delivery vehicles in his televised State of the Union speech.²⁸ Similarly, President Trump has on several occasions referred to a “super duper missile,” the existence of which has not been previously disclosed.²⁹
- **Parades:** Parades have long been a venue for revealing new capabilities. The Soviet Union routinely chose parades to disclose new military hardware. More recently, the Chinese government used parades to unveil the DF-21D ASBM, DF-26 IRBM, and DF-17 hypersonic missile.³⁰
- **Flyovers:** Like parades, aircraft flyovers can provide the venue to reveal capabilities. For example, the Soviet Air Force staged flyovers of their small fleet of M-4 *Bison* bombers during the 1955 Aviation Day parade in a way calculated to make it appear as though the Soviet Union had many more bombers than it actually had.³¹ More recently, the People’s Liberation Army (PLA) Air Force showed off the weapons load of its J-20 stealth fighter during a flyover at the Zhuhai Air Show.³²
- **News stories:** Russia has used stories in state-run media to chronicle the development of new weapon systems.³³ Similarly, China has used media to publicize exercises involving its missile force.³⁴
- **Intentional Displays to Commercial or Military Satellites:** China’s missile test ranges show realistic mockups of various targets, including Kadena and Misawa air

28 Dave Majumdar, “Russia’s Nuclear Weapons Buildup is Aimed at Beating U.S. Missile Defenses,” *The National Interest*, May 1, 2018, available at <https://nationalinterest.org/print/blog/the-buzz/russias-nuclear-weapons-buildup-aimed-beating-us-missile-24716>.

29 Kyle Mizokami, “What is Trump’s ‘Super Duper Missile’?: An Investigation,” *Popular Mechanics*, June 16, 2020, available at <https://www.popularmechanics.com/military/weapons/a32883396/super-duper-missile/>.

30 Andrew Tate and Samuel Cranny-Evans, “China Displays New Platforms, Weapon Systems in Large Military Parade,” *Jane’s Defense Weekly*, October 1, 2019.

31 Lawrence Freedman, *U.S. Intelligence and the Soviet Strategic Threat*, second edition (Princeton, NJ: Princeton University Press, 1986), 66-67; 67-80.

32 Brad Lendon, “China’s Stealth Fighters Show Off Missile Payload,” CNN, November 12, 2018, available at <https://www.cnn.com/2018/11/11/asia/china-stealth-fighter-zhuhai-airshow-intl/index.html> (accessed January 4, 2020).

33 Jill Hruby, *Russia’s New Nuclear Weapon Delivery Systems: An Open-Source Technical Review* (Washington, D.C.: Nuclear Threat Initiative, 2019).

34 Bonnie Au, “China’s DF-26 Ballistic Missile Drill Sends ‘Clear Message’ to the U.S.,” *South China Morning Post*, January 28, 2019, available at <https://www.semp.com/video/china/2184029/chinas-df-26-ballistic-missile-drill-sends-clear-message-us> (accessed January 4, 2020).

bases and the Yokosuka naval base.³⁵ Iran has also periodically displayed, and attacked, a mock-up of a U.S. aircraft carrier.³⁶

- **Displays at arms shows:** Arms producers frequently display developmental weapon systems as arms shows. For example, China displayed a mockup of its CH-7 unmanned combat aerial vehicles (UCAVs) at the 2018 Zhuhai Air Show.³⁷ Related to this is the display of new capabilities coincident with visits from senior leaders, such as the PLA’s “accidental” revelation of the J-20 fighter aircraft during Secretary of Defense Robert Gates’ visit to China.
- **“Leaked” press stories:** New capabilities are sometimes disclosed, inadvertently or deliberately in the press. For example, in 2015 Russian television “accidentally” broadcast a technical drawing of the “Status-6” nuclear torpedo as part of coverage of a meeting between President Vladimir Putin and military leaders in Sochi.³⁸ More recently, the Secretary of the Army’s Flickr page appeared to reveal the existence of a previously unknown hypersonic weapon system known as Vintage Racer.³⁹

One way to measure the value of revealing capabilities is through the costs imposed upon a competitor. Another is through increased deterrence. In practice, revealing capabilities effectively would benefit from an understanding of the way a competitor strategic calculations, to include a detailed picture of his knowledge (and ignorance) of our capabilities, and channels and devices for revelation that are credible to the competitor.⁴⁰

Bureaucratic politics and organizational culture can further complicate efforts to conceal or reveal capabilities purposefully. Weapons programs involve various communities with diverging interests that can breed tension and frustration and render unified action difficult. For example, much of the science and technology community is dedicated to the principle of open basic research and international cooperation.⁴¹ The acquisition community has

35 Thomas Shugart, “Has China Been Practicing Preemptive Missile Strikes Against U.S. Bases?” War on the Rocks, February 6, 2017, available at <https://warontherocks.com/2017/02/has-china-been-practicing-preemptive-missile-strikes-against-u-s-bases/>

36 “Report: Iran builds fake aircraft carrier for drills.” *Al-Monitor*, June 9, 2020. <https://www.al-monitor.com/pulse/originals/2020/06/iran-builds-aircraft-carrier-mock-drills-us-persian-gulf.html>.

37 “China Unveils Stealth Combat Drone in Development,” November 7, 2018, available at <https://www.cbc.ca/news/technology/china-combat-drone-1.4841792> (accessed January 4, 2020).

38 “Russia Reveals Giant Nuclear Torpedo in State TV ‘leak,’” BBC, November 12, 2015, available at <https://www.bbc.com/news/world-europe-34797252> (accessed June 16, 2020).

39 Kyle, Mizokami, “A Little Known Hypersonic Weapon Gets an Unlikely Reveal on Twitter,” *Popular Mechanics*, June 9, 2020, available at <https://www.popularmechanics.com/military/weapons/a32802762/vintage-racer-hypersonic-weapon/>

40 Kevin N. Lewis, *Getting More Deterrence Out of Deliberate Capability Revelation* (Santa Monica, CA: RAND Corporation, 1989), 5-6.

41 More precisely, the U.S. defense science and technology community is split between those who conduct basic research and early-stage applied research, who are focused on open research and cooperation, and those who conduct later-stage applied and advanced research, where there is very limited sharing of information, even with other Service science and technology communities and key international partners.

incentives to reveal the capabilities of new systems in order to demonstrate program performance and ensure future support and funding. The security community's *raison d'être* is concealing capabilities in order to preserve perishable sources of advantage and inflict surprise. The operational community faces the need to plan and train with new capabilities, which requires a certain degree of openness, but also the desire to conceal capabilities for wartime advantage and to inflict surprise. The need to publicize a program's success in order to garner support and funding for it, the cost and difficulty of security measures, and bureaucratic standard operating procedures can all hinder efforts to conceal capabilities. Conversely, security considerations, fear of provoking an undesired reaction from a competitor, as well as concern over the perishability of a capability can interfere with efforts to reveal a capability. There is also a mismatch between the authorities and resources necessary to execute a program to reveal capabilities strategically. It is only at the highest levels of leadership — for example, at the level of the Secretary of Defense or of the Service Secretaries — that these divergent considerations can be weighed and balanced. However, senior decision-makers would need a formal way to balance the uncertain costs and risks of revealing capabilities compared to the potential benefits.

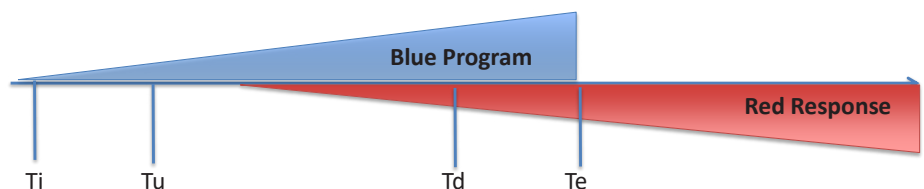
CHAPTER 3

A Framework for Selective Disclosure

There are a number of ways that a government can intentionally and selectively reveal new capabilities to achieve strategic ends. One approach would be to gradually reveal the existence of new capabilities over time. Another would be to simultaneously reveal or conceal a set of capabilities. A third approach would be periodically to reveal new capabilities via demonstrations. A final approach would be periodically to reveal general information that is suggestive of new capabilities to achieve a cumulative effect.

To examine these issues in greater depth, this chapter posits three models of acquisition: the standard program, the classified program, and selective disclosure. The standard program represents the way that most new capabilities are developed, with the information dimension subordinated to standard operating procedures. The classified program uses concealment to achieve strategic ends, whereas selective revelation uses publicity to achieve objectives.

FIGURE 1: BASIC FRAMEWORK



T_i = Time of Initiation
 T_u = Time of unveiling
 T_d = Time of deployment
 T_e = Time of employment

In the section that follows, each type of program will be examined in terms of five milestones:

- **Time of initiation (T_i)** represents when the program is authorized. This could involve the initiation of a specific military system, or a more general technical direction or portfolio of research, such as stealth or hypersonics.
- **Time of unveiling (T_u)** represents when the program is acknowledged publicly. For many programs, the time of initiation is the same as the time of unveiling. Classified programs, however, are unveiled after they are initiated.
- **Time of deployment (T_d)** represents when the system reaches initial operational capability (IOC).
- **Time of employment (T_e)** represents when the system is actually used in combat. Before its debut on the battlefield, it is unclear just how effective it will be.
- **Time of compromise (T_c)** represents when an adversary learns in detail about the capabilities of the system. Some programs are compromised in development through espionage. Others are compromised when they are employed on the battlefield. For example, the United States employed a previously classified cruise missile equipped with a carbon-fiber warhead designed to short out electrical power transmission lines during the 1991 Gulf War.⁴² The previously classified stealthy helicopter that Navy SEALs employed in the raid that killed Osama bin Laden was compromised when one crashed during the mission.⁴³

42 Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Company, 1996), 227.

43 Brian Ross, Rhonda Schwartz, Lee Ferran and Avni Patel, "Top Secret Stealth Helicopter Program Revealed in Osama Bin Laden Raid: Experts," ABC news, May 4, 2011, available at <https://abcnews.go.com/Blotter/top-secret-stealth-helicopter-program-revealed-osama-bin/story?id=13530693> (accessed January 4, 2020).

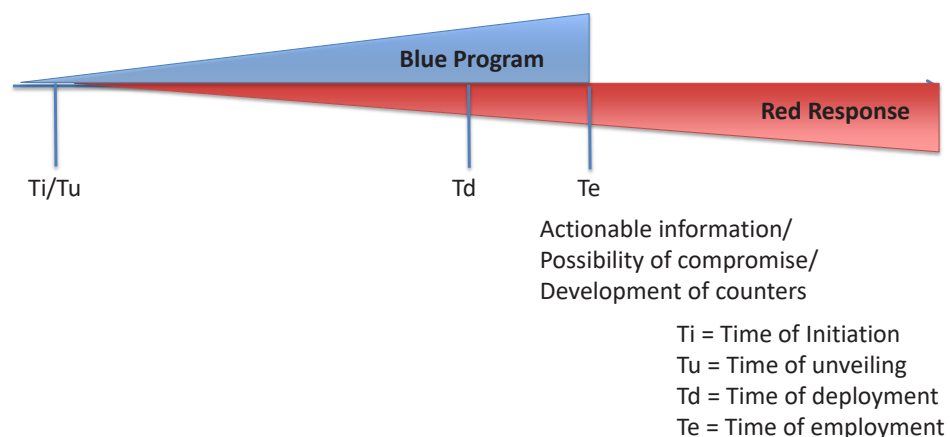
Most programs are initiated in public and are unveiled when they are initiated. That is, the initiation of a new program is announced publicly, and its basic parameters, as best they are known, are also publicized. Basic program information on cost, schedule, and rough capabilities are widely available and routinely updated as part of the budget cycle and to demonstrate the program's progress. That having been said, some program parameters are concealed in order to delay the development of countermeasures. For example, U.S. defense acquisition programs are required to have a Program Protection Plan that specifies efforts to deny adversaries access to critical program information.⁴⁴ Other program parameters may be undefined early in the program's life.

Standard Program

Seen from the perspective of an adversary, a standard program offers a target that is visible from the beginning and gradually comes into sharper focus as the program proceeds through development into acquisition and then deployment. However, absent detailed espionage, the information available on a new system while in development may be insufficient to field countermeasures, which may require detailed information on the system that is absent or unavailable early on.

FIGURE 2: STANDARD PROGRAM

- Regular reporting on cost, schedule, Capabilities.
- Conceal some elements of program to avoid development of countermeasures.



44 DoD Instruction 5000.02, "Defense Acquisition," November 26, 2013, p. 84, available at https://www.acq.osd.mil/fo/docs/DSD%205000.02_Memo+Doc.pdf (accessed December 15, 2019).

Once the system reaches testing and deployment, an adversary's opportunities to collect information on it may grow. Those opportunities multiply when the system is exported or used in combat, and are even greater if the adversary is able to compromise the system by acquiring one. Compromise of a program allows an adversary to copy or counter it. For example, Moscow was reportedly able to exploit the unmanned D-21B strategic reconnaissance drone when one landed on Soviet territory in late 1969.⁴⁵ Similarly, beginning in the 1970s the U.S. Air Force acquired a number of Soviet fighter aircraft that it analyzed and subsequently used to train U.S. pilots in a highly classified program.⁴⁶ More recently, according to Russian press reports, the Russian armed forces obtained two U.S. *Tomahawk* cruise missiles used in Syria and intended to use knowledge of it to develop electronic warfare systems to defeat it.⁴⁷

Thus for a standard program, absent successful espionage adversaries are able to react decisively some time after deployment, and most likely after employment or compromise.

Case Study: B-1 Lancer

FIGURE 3: B-1 LANCER



Photo courtesy of the United States Air Force.

45 Michael Peck, "How the U.S. Air Force Sent Russia Its Cutting Edge D-21B Drone," *The National Interest*, June 14, 2020, available at <https://nationalinterest.org/blog/reboot/how-us-air-force-sent-russia-its-cutting-edge-d-21b-drone-162690> (accessed July 5, 2020).

46 Colonel (Retired) Gaillard R. Peck, Jr., *America's Secret MiG Squadron: The Red Eagles of Project CONSTANT PEG* (Oxford: Osprey, 2012).

47 "Russia to Create New Electronic Warfare Systems After US Missiles Study — KRET," Sputnik News, April 29, 2018, available at <https://sputniknews.com/military/201805291064892605-russia-create-anti-tomahawk-electronics/> (accessed December 15, 2019).

The development of the B-1 *Lancer* strategic bomber is an example of how the overt development of capabilities can serve as an element of a competitive strategy. The B-1 was first envisioned in the 1960s as an aircraft that would combine the high speed of the B-58 *Hustler* with the range and payload of the B-52 *Stratofortress*. It was designed to penetrate Soviet radar-guided air defenses by flying at very low altitudes, reducing the ability of air defense operators to react. Moreover, the Soviet military spent an enormous amount on air defense. From 1945 to the early 1960s, the Soviet Union spent more on air defense than nuclear weapons.⁴⁸ Even after the advent of the ICBM, the Soviet Union continued to spend about 15% of its military budget on air defense, about as much as on the navy.⁴⁹ Because the Soviet Union showed a great propensity to defend its territory against overflights, U.S. strategists had good reason to expect that deploying nuclear-armed B-1s would reinforce Soviet decisions to invest heavily in air defenses.⁵⁰

After a long series of studies, Rockwell International (now Boeing) won the design competition for what became the B-1A with an aircraft that had a top speed of Mach 2.2 at high altitude and the ability to fly long distances at Mach 0.85 at very low altitudes. However, the high cost of the aircraft, the introduction of the AGM-86 cruise missile, and the classified development of stealth led to the program being cancelled in 1977 after four prototypes had been built.

The program was revived in 1981 after the election of 1981 President Reagan moved forward with the deployment of an improved variant of the bomber, the B-1B *Lancer*. The first production B-1B flew in October 1984 and the first aircraft was delivered to the Air Force in June 1985. The bomber achieved initial operational capability on October 1, 1986, with the Air Force acquiring a total of 100 of the aircraft, with the last one delivered in May 1988. Although fielded as a nuclear delivery vehicle, in the early 1990s the B-1 was converted to a conventional bomber. It first served in combat during Operation Desert Fox in 1998 and again during the NATO air campaign over Kosovo the following year. The B-1B subsequently supported U.S. combat operations in Afghanistan and Iraq.

The B-1 is a good example of the overt development of a new weapon system to a strategic end. In particular, B-1 was meant to confront the Soviets with the certain need to defend against a low-altitude penetrating bomber, to include investment in interceptors with look-down/shoot-down radar and surface-to-air missiles. The Soviets had some knowledge of the aircraft's parameters and capabilities. Indeed, the Soviet Union fielded the Tu-160 *Blackjack* bomber, which at least outwardly bears a passing resemblance to the *Lancer* and whose development was influenced by the American bomber.⁵¹

48 Dmitry (Dima) Adamsky, "The art of net assessment and uncovering foreign military innovations: Learning from Andrew W. Marshall's legacy," *The Journal of Strategic Studies* 43, no. 5 (2020): 611-644,

49 Westwick, p. 5.

50 Andrew F. Krepinevich, Jr., and Barry D. Watts, *The Last Warrior: Andrew Marshall and the Shaping of Modern American Defense Strategy* (New York: Basic Books, 2015), 131.

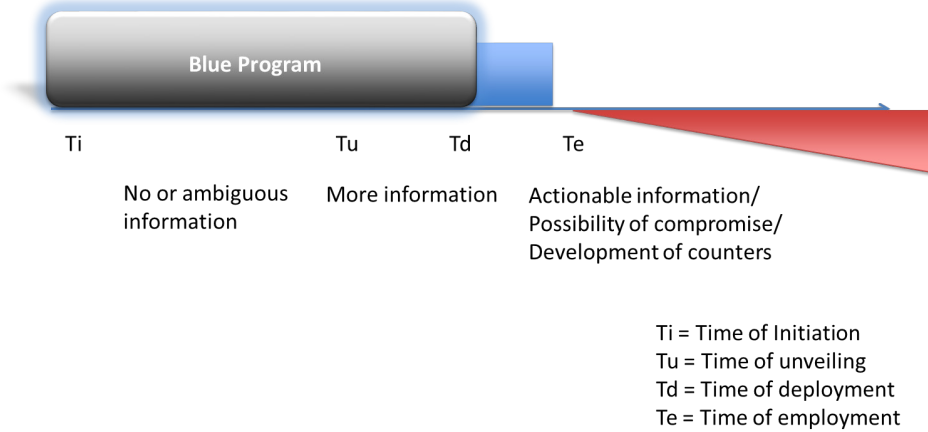
51 "Tupolev Tu-160 (Blackjack)." Military Factory, July 29, 2020. https://www.militaryfactory.com/aircraft/detail.asp?aircraft_id=289.

Classified Program

A classified program seeks to conceal the development of a system or key features of it in order to preserve a future operational advantage, delay an adversary response, and temporarily suspend interaction.⁵²

FIGURE 4: CLASSIFIED PROGRAM

- Conceal development/features to surprise/delay response/suspend interaction.



Most classified programs are initiated in secret and only unveiled later; in some cases, a program may be launched openly and subsequently classified, as was the case with U.S. research on stealth. In either case, a classified program involves both an initial decision to conceal a capability (rather than treating it like a regular program) and a subsequent decision to reveal it. That is, the time of initiation precedes the time of unveiling by years or perhaps decades. In some cases, the very existence of the capability may be concealed. In other cases, the program may be acknowledged, but with few or no details available. In some cases, the program may be unveiled before it is deployed; in other cases, it may remain covert even after it is deployed; in still other cases, it may remain hidden until employed in combat. Indeed, some classified programs are not unveiled until after they are retired. For example, Northrop’s stealthy Battlefield Surveillance Aircraft, Experimental (BSAX) program, which operated under the code name TACIT BLUE, flew 135 missions between 1982 and 1985 and demonstrated that a stealthy aircraft could operate safely close to the forward line of the battlefield

52 The notion of a classified program is different from what Brendan Rittenhouse Green and Austin Long term “clandestine capabilities.” As they put it, “the key feature of a clandestine capability is that successful countermeasures can sharply degrade its military value, usually because the capability depends on some enemy vulnerability that can be repaired once it is discovered.” Brendan Rittenhouse Green and Austin Long, “Conceal or Reveal? Managing Clandestine Military Capabilities in Peacetime Competition,” *International Security* 44, no. 3 (Winter 2019/20): 48-83.

without being detected by enemy radar. Although two aircraft were built, the design never entered production, and the program was not acknowledged until 1996, more than a decade after its aircraft were retired and put into storage.⁵³

Absent penetration of the program, an adversary may be unaware of the existence of a classified program in the early stages, or may know about it only in the most general and ambiguous terms. Once it is unveiled, it will be able to gather additional information, but that may be insufficient to develop an effective response. It is likely only after the program is employed or compromised that an adversary will be able to gather enough information to develop countermeasures. The net effect of security measures is to deny an adversary actionable information and thus delay its ability to develop effective countermeasures.⁵⁴ For example, Russia publicly unveiled its *Avangard* hypersonic glide vehicle in March 2018 and then declared it operational in December 2019.⁵⁵

Case Study: F-117 *Nighthawk* and B-2 *Spirit*

The development of stealth aircraft such as the F-117 *Nighthawk* and B-2 *Spirit* are useful case studies of classified programs. The development of stealth was a part of a strategy for competing with the Soviet Union. One of the main arguments for going ahead with the B-1 *Lancer* and later the B-2, was to impose on Moscow the tremendous cost of modernizing the Soviet Union's territorial air defense. As the Commission on Integrated Long-Term Strategy noted in 1988, "Stealth operates on a major Soviet vulnerability: the central role assigned to radar-based air defenses in protecting not only the Soviet Union but Warsaw Pact theater forces."⁵⁶ Pentagon analysts noted that the Soviets had historically accorded the highest priority to the defense of the Soviet motherland. As a result, Moscow fielded a robust network of early warning and fire control radars, air defense guns, SAMs, and interceptors to defend Soviet territory. The Soviet government also invested considerable sums in passive defenses and civil defense measures.

The ability to penetrate Soviet airspace in the face of such formidable defenses represented an area of considerable advantage for the United States. As Secretary of Defense Caspar Weinberger put it in 1987, "Low observable technologies promise to increase further the competitive advantage of our bomber force, to such a degree as to make obsolete much of the Soviets' air defense infrastructure." In his view, the ability of the United States to penetrate Soviet air space had already forced the Soviets to invest the equivalent of over \$120 billion in

53 Werrell, *Chasing the Silver Bullet*, 129-130; TACIT BLUE at http://www.wpafb.af.mil/museum/modern_flight/mf37a.htm.

54 Alternatively, lacking actionable information and adversary might choose to spend resources to develop countermeasures based upon speculation.

55 Associated Press, "New Russian Weapon can Travel 27 Times the Speed of Sound," December 27, 2019, available at <https://nypost.com/2019/12/27/new-russian-weapon-can-travel-27-times-the-speed-of-sound/> (accessed June 16, 2020).

56 Ikle and Wohlstetter, *Discriminate Deterrence*, 49.

strategic air defense.⁵⁷ The continuing development of stealth would render the Soviet Union vulnerable and force the Soviet leadership to divert funds from offensive arms to defensive arms, thereby imposing costs on the weak Soviet economy and reducing Moscow's ability to threaten the United States.

Aircraft achieve stealth through a number of means: by reducing their radar cross-section (RCS), lowering their infrared signature, becoming quieter, and decreasing their visibility. The first aircraft to be designed with these considerations in mind was the F-117A *Nighthawk*, which grew out of an Air Force program initiated in the early 1970s to explore the application of stealth to aircraft. In the summer of 1974 the Defense Science Board investigated the problems that NATO aircraft would encounter against Warsaw Pact air defenses in a future war. The experience of the Vietnam and 1973 Arab-Israeli wars showed that ground defenses could inflict heavy losses on attacking aircraft.⁵⁸ As a result, the Defense Advanced Research Projects Agency (DARPA) initiated conceptual studies of whether it was possible to build a low-observable aircraft. In the summer of 1975 DARPA requested proposals for what became known as the Experimental Survivable Testbed (XST). In November 1975 Lockheed and Northrop were awarded contracts for approximately \$1.5 million to design and produce a full-scale model of a low-observable aircraft for RCS testing.⁵⁹

FIGURE 5: HAVE BLUE



Photo courtesy of the Defense Advanced Research Projects Agency (DARPA).

57 Caspar W. Weinberger, *Annual Report to the Congress, Fiscal Year 1988* (Washington, D.C.: GPO, January 12, 1987).

58 Werrell, *Chasing the Silver Bullet*, 125.

59 David C. Aronstein and Albert C. Piccirillo, *Have Blue and the F-117A: Evolution of the "Stealth Fighter"* (Reston, VA: American Institute of Aeronautics and Astronautics, 1997), 23, 29.

In April 1976 Lockheed was authorized to proceed with the design, construction, and flight-testing of two demonstrator aircraft as part of a highly classified program known as HAVE BLUE.⁶⁰ Beginning in April 1977, the HAVE BLUE aircraft flew against a variety of radars, including actual Soviet equipment, and proved to be virtually undetectable.⁶¹

The Soviets learned of the existence of stealth within a year of the first concept studies through disclosures in the American press. In June 1975, *Aviation Week* reported that ARPA had funded Northrop, Lockheed, and McDonnell Douglas to produce “a fighter or attack aircraft that could escape enemy radar, infrared, and visual tracking.” Subsequent articles disclosed the competition between Lockheed and Northrop, the contract awarded to Lockheed for HAVE BLUE, and the first test flights of the first stealth demonstrator aircraft, albeit without great detail.⁶²

The F-117 was acquired rapidly and concealed for years after it became operational. In the spring of 1977 the Air Force decided to purchase a few stealth fighters before acquiring a stealth bomber.⁶³ In November 1978 the Air Force launched a program, SENIOR TREND, to build the F-117.

On August 22, 1980, in the midst of the presidential election season, Secretary of Defense Harold Brown announced the United States was developing a new technology, which “alters the military balance significantly.” The revelation, which shocked program managers, was made in part to deflect criticism of the Carter administration’s decision to cancel the B-1 bomber program.⁶⁴ Also relevant to the decision to disclose the project was the fact that the F-117 was only about two years from deployment and would soon require large budgets that would be difficult to conceal.⁶⁵ Although the Pentagon acknowledged that it was pursuing stealth, it did not disclose that it had built and was deploying operational aircraft.

60 Westwick, p. 111.

61 Werrell, *Chasing the Silver Bullet*, 128.

62 Peter Westwick, *Stealth: The Secret Contest to Invent Invisible Aircraft* (Oxford: Oxford University Press, 2020), p. 114.

63 Rich and Janos, *Skunk Works*, 64.

64 Atkinson, “Stealth,” A1.

65 Peter Westwick, *Stealth: The Secret Contest to Invent Invisible Aircraft* (Oxford: Oxford University Press, 2020), p. 114.

FIGURE 6: F-117 NIGHTHAWK



Photo courtesy of the United States Air Force.

The F-117 made its first flight in 1981 and the Air Force declared it operational in October 1983, nine months later than planned but less than five years after the project was approved. The aircraft were deployed in the 4450th Tactical Group, located on a newly-constructed \$200 million base at Tonopah Test Range, Nevada.⁶⁶ Between August 1982 and July 1990 Lockheed delivered 59 of the aircraft.⁶⁷

It was not until November 10, 1988, that the Pentagon publicly unveiled the F-117 — five years after deployment and seven years after its first flight.⁶⁸ Having accused the Carter administration of playing politics by announcing the existence of stealth just before the 1980 election, the Reagan administration delayed its announcement until just after the 1988 election.⁶⁹

Before the aircraft was employed in combat, it was unclear just how effective stealth would be. The Air Force nearly employed the aircraft in 1986 as part of the U.S. response to Libyan involvement in the La Belle Disco bombing in West Berlin, but ultimately did not because Secretary of Defense Caspar Weinberger was reluctant to reveal the aircraft’s existence.⁷⁰ After it was unveiled in 1988, however, the F-117 saw limited use in Panama in 1989 and extensive employment in the 1991 Gulf War, during which its stealth and ability to deliver

66 Ibid, p. 109.

67 Aronstein and Piccirillo, *Have Blue and the F-117A*, 113.

68 Peter Westwick, *Stealth: The Secret Contest to Invent Invisible Aircraft* (Oxford: Oxford University Press, 2020), p. 109.

69 Ibid, p. 109-110.

70 Rich and Janos, *Skunk Works*, p. 96

precision-guided weapons were key to the effectiveness of the U.S.-led air campaign against Saddam Hussein.

The F-117 was employed again during the 1999 NATO air war over Kosovo. On the fourth night of the war, a barrage of SA-3 SAMs downed an F-117 *Nighthawk* northwest of Belgrade. It appears that a lucky combination of low-technology tactics, adaptation to U.S. tactics, and poor planning by overconfident U.S. forces allowed Serb air defenses to bring down the aircraft.⁷¹ Serbia recovered debris from the aircraft and put parts of it on display in the air museum in Belgrade. In addition, the Serbs reportedly gave pieces of the aircraft to Russia, whose scientists purportedly used it to improve the ability of their air defense systems to detect and shoot down stealth aircraft.⁷²

The deployment of stealth also affected Soviet resource allocation. After the F-117 was deployed, the Soviet military redoubled the effort it devoted to air defense, increasing the budget by 8% per year to field new radar, anti-aircraft missiles, and interceptors.⁷³

In September 1980, the Air Force asked Northrop and Lockheed for formal proposals to build a larger stealth aircraft, the Advanced Technology Bomber (ATB). The Lockheed proposal, code-named SENIOR PEG, resembled a larger version of the faceted F-117. The Northrop proposal, code-named SENIOR ICE, relied primarily on carefully sculpted curves and rounded surfaces and a flying wing design reminiscent of the Northrop YB-49 of the late 1940s.⁷⁴ On October 3, 1981, the Air Force announced that Northrop had won the ATB contract and named the major subcontractors on the program.⁷⁵ Three years later, in 1984, the ATB was officially named the B-2.

71 Werrell, *Chasing the Silver Bullet*, 116-120.

72 David A. Fulghum and Robert Wall, "Russians Admit Testing F-117 Lost in Yugoslavia," *Aviation Week and Space Technology*, October 8, 2001, p. 80.

73 Westwick, p. 194

74 Atkinson, "Stealth," A1.

75 Westwick, p. 157

FIGURE 7: B-2 SPIRIT

Photo Courtesy of the United States Air Force.

Concealing the capabilities of the B-2 was the program's top priority. The Air Force's Program Management Directive for the bomber listed the program's priorities as (1) security, (2) performance, (3) schedule, and (4) cost.⁷⁶ Such a large classified program required that Northrop expand its classified workforce, store and track classified documents, establish classified computer networks, and maintain secure facilities. Secrecy added perhaps 10-15% to the cost of the B-2.⁷⁷

There was reason for concern. In 1981, the FBI discovered that a Hughes engineer had sold information on the low probability of intercept/low probability of detection (LPI/LPD) radar on the B-2 to the Soviets. Three years later, the FBI arrested a Northrop engineer and charged him with seeking to sell secrets related to the B-2 to Moscow.⁷⁸ At the same time, members of Congress were concerned that the Defense Department was using classification to shield the program from scrutiny. In response, in June 1986 the Air Force released a fact sheet on the B-2 that included the program's overall cost.⁷⁹

In 1987 the Air Force granted Northrop approval to begin procuring 132 of the stealthy bombers for the strategic nuclear attack mission. The first B-2 was publicly displayed on

⁷⁶ Ibid, p. 168.

⁷⁷ Ibid, p. 168-9.

⁷⁸ Ibid, p. 169.

⁷⁹ Ibid, p. 171

November 22, 1988, only twelve days after the unveiling of the F-117A. It made its first flight on July 17, 1989, and operational testing continued through June 1997.

The end of the Cold War and the disintegration of the Soviet Union led to a diminution of the B-2 program, and in 1992 the Bush administration capped it at 20 bombers. Later the Clinton administration allowed the initial flight test vehicle to be upgraded to a bomber, bringing the total inventory to 21.⁸⁰

As noted above, the U.S. government implemented extensive and expensive security measures to conceal the features, if not the existence, of the stealth aircraft programs and delay an effective Soviet response.⁸¹ Nonetheless, some information on U.S. stealth programs was available to the U.S. public, and thus the Soviets.⁸² The first report claiming that the government was developing a small stealthy fighter appeared in the summer of 1975. Throughout the early 1980s, speculation about the plane grew.⁸³ Drawings that purported to show the design of the aircraft appeared in newspapers and professional journals. A May 1983 *New York Times* report talked about the existence of a stealth bomber using “carbon and fiberglass and fiber-reinforced airframe skins” and “special paints” that would “have V-shaped delta wings and engines integrated into the fuselage.” It also discussed the development of a stealth fighter.⁸⁴ In 1986, the Testor’s model company even released a model of the “F-19 Stealth Fighter” - though the aircraft bore little resemblance to the F-117.⁸⁵

Whereas the United States was able to deny the Soviets precise information about U.S. stealth programs, U.S. intelligence provided insight into the state of Soviet research and development on stealth and counter-stealth technologies, in effect allowing the United States to “see into the future”. Although the United States collected information on Soviet stealth research from a variety of sources, it would appear that information from the Soviet electronics engineer Adolf Tolkachev was particularly important. Tolkachev, who worked at the Soviet radar design bureau Phazotron as one of its chief designers, spied for the United States between 1977 and 1985, a period that coincided with the development of the F-117, B-2, and other stealth

80 Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000), 158

81 See James A. Kitfield, “The Secret Doings at Tonopah,” *Air Force Magazine*, September 3, 2008, available at <https://www.airforcemag.com/article/0193tonopah/>. Tyler Rogoway, “Keeping Stealth Stealthy: The F-117’s Secret Life at Tonopah Test Range Airport,” *Jalopnik*, December 15, 2015, https://foxtrotalpha.jalopnik.com/keeping-stealth-stealthy-the-f-117s-secret-life-at-ton-1747371730_

82 See, for example, Directorate of Intelligence, Office of Scientific and Weapons Research, *U.S. Stealth Programs and Technology: Soviet Exploitation of the Western Press*, SW M 88-20026, August 1, 1988.

83 For reports of stealth development in the press, see Aronstein and Piccirillo, *Have Blue and the F-117A*, 243-250.

84 Drew Middleton, “Stealth Technology: Progress in Concealing Planes,” *The New York Times*, May 31, 1983, A17.

85 Werrell, *Chasing the Silver Bullet*, 135.

projects such as the Advanced Cruise Missile.⁸⁶ Tolkachev had deep knowledge of Soviet research and development on radar and thus could provide insight into the ability of the Soviet armed forces to respond to the U.S. deployment of low-observable aircraft.

Intelligence from sources such as Tolkachev, combined with the U.S. intelligence community's in-depth understanding of the Soviet Union's highly structured research and development system, allowed the United States to forecast the pace of Soviet responses to stealth. The CIA assessed that the Soviets had a good understanding of U.S. stealth programs, but were behind the United States. One 1984 report, which likely incorporated intelligence from Tolkachev, concluded "We feel certain that the Soviets did not have a Stealth program in the 1970s. Moreover, "if they have [a stealth] program under way now, it is probably in the very early stages, and deployment probably would not occur until the 1990s because development of new systems requires about a decade."⁸⁷ A Special National Intelligence Estimate on Soviet reactions to stealth published the following year concluded that although the Soviets were aware of U.S. plans to develop stealth aircraft, their air defenses would remain vulnerable to penetration by stealth aircraft for at least the next decade due to the limitations of existing Soviet sensors and information-processing systems, the massive and capital-intensive nature of the Soviet air defense effort, the Soviets' lack of sophisticated measurement ranges, and the length of the Soviet research and development cycle.⁸⁸ All intelligence thus indicated that the United States had a clear, and exploitable, lead in stealth.

Stealth thus provides a good case study of decisions to conceal and then reveal a new capability to strategic advantage. It also highlights the considerations that went into those decisions as well as the complications that arose from them.

86 See David E. Hoffman, *The Billion Dollar Spy* (New York: Doubleday, 2015), and Milt Bearden and James Risen, *The Main Enemy: The Inside Story of the CIA's Final Showdown with the KGB* (New York: Random House), p. 37. For a skeptical view of Tolkachev, see Benjamin B. Fischer, "The Spy Who Came in for the Gold: A Skeptical View of the GTVANQUISH Case," *Journal of Intelligence History* 8, no. 1 (Summer 2008): 29-54.

87 Central Intelligence Agency, Directorate of Intelligence, Soviet Work on Radar Cross Section Reduction Applicable to a Future Stealth Program, SW 84-10015, February 1984, iii-iv, available at <https://www.cia.gov/library/readingroom/docs/CIA-RDP86R00254R000100050001-4.pdf/>

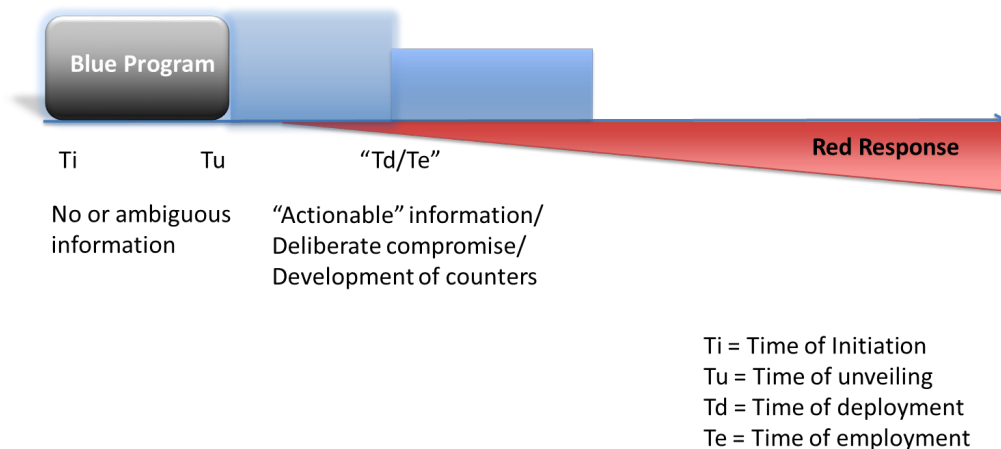
88 SNIE 11-7/9-85/L, Soviet Reactions to Stealth, August 1985, 5, available at https://www.cia.gov/library/readingroom/docs/DOC_0000261288.pdf.

Selective Disclosure

Whereas a classified program seeks to conceal a capability to delay response, selective disclosure seeks to use the revelation of a new capability to induce an adversary reaction or provoke a response. Selective disclosure can involve a single, discrete capability, or it can be cumulative, designed to provoke confusion, impose costs, and trigger disassociated adversary responses. For example, public disclosure of interest in emerging scientific and technological areas with national security applications (such as quantum physics) could be used to trigger a costly research and development response. Such an approach would involve not the revelation of a new capability *per se*, but rather vastly divergent components for the purposes of misdirection, provoking investment, or spurring counter-measures against non-existent capabilities.

FIGURE 8: DEMONSTRATION

- Reveal development to induce reaction/provoke response.
- Make it seem that the capability is more near-term than it is.



Selective disclosure can also involve the overt demonstration of new capabilities.⁸⁹ A demonstration may allow a state to gain some of the benefits of new technologies before a deployable capability is available. In other cases, a state may exploit technologies that will never be deployed, but may provoke a desired response or investment from an adversary. One way to do so is to make it appear that the deployment of a program that is in development is more near-term than it actually is. In other words, the program’s time of deployment and time of

⁸⁹ On demonstrations, see Evan Braden Montgomery, “Signals of Strength: Capability Demonstrations and Perceptions of Military Power,” *The Journal of Strategic Studies* 43, no. 2 (April 2020).

employment are manipulated to provide the adversary with “actionable” intelligence to induce the development of countermeasures and bolster deterrence by creating the appearance of new operational capabilities. Seen from an adversary’s perspective, a demonstration can appear like the unveiling of a classified program or the emergence of a new standard program.

One can think of several families of demonstrations. First, one can think of demonstrations that are geared to signaling the advent of new capabilities as well as the intent to use them. For example, Operation Resultant Fury demonstrated the ability of a B-52 bomber to sink an amphibious ship.⁹⁰ Similarly, during the 2018 RIMPAC exercise, the U.S. Army demonstrated the ability to launch a Naval Strike Missile from the back of a Palletized Load System (PLS) to attack a decommissioned landing ship.⁹¹ More recently, the U.S. Navy unveiled the fact that it had converted EA-18 *Growler* electronic attack jet into unmanned aerial vehicles and had used a manned *Growler* to control two unmanned ones.⁹² Similarly, Iran has constructed a mockup aircraft carrier that it has used as a target in past exercises as a way of demonstrating that Tehran possesses the ability to strike U.S. carriers.⁹³

FIGURE 9: XB-70 VALKYRIE



Photo Courtesy of the United States Air Force.

90 “U.S.S. Schenectady (LST 1185): Operation Resultant Fury,” available at <http://www.ussschenectadylst1185.org/3-ResultantFury.htm> (accessed August 16, 2020).

91 “Video: RIMPAC Participants Sink Decommissioned Landing Ship USS Racine,” *Naval Today*, July 15, 2018, available at <https://www.navaltoday.com/2018/07/15/video-rimpac-participants-sink-decommissioned-landing-ship-uss-racine/> (accessed June 17, 2020).

92 Kyle Mizokami, “The Navy’s Surprise Unmanned Fighter is a Glimpse of War’s Near Future,” *Popular Mechanics*, February 5, 2020, available at <https://www.popularmechanics.com/military/aviation/a30771030/growler-unmanned-navy/> (accessed June 19, 2020).

93 Patrick Tucker, “Iran is Getting Ready to Blow Up a Fake Aircraft Carrier, Again,” *Defense One*, January 8, 2020, available at <https://www.defenseone.com/technology/2020/01/iran-getting-ready-destroy-its-fake-aircraft-carrier-again/162305/> (accessed January 8, 2020).

A second category of demonstration involves “dead ends,” which seek to induce an adversary to go down a technologically or operationally unproductive path. For example, the Soviet MiG-25 interceptor and SA-5 surface-to-air missile, two very expensive programs, were launched in response to the advent of U.S. high-altitude, high-speed aircraft programs, including the F-108, A-12, and XB-70, most of which were never deployed.⁹⁴ Moreover, the MiG-25 and SA-5 were poorly suited to countering the bomber concepts that the United States actually deployed — low-altitude penetration by B-52s, and then eventually the B-1.

A third category of demonstration involves “divestitures.” Here the object is to get maximum value from a capability of waning utility. Any capability, covert or open, has a “shelf life”, after which its effectiveness diminishes. Rather than keeping programs whose effectiveness is diminishing secret, it might make sense to demonstrate them overtly.⁹⁵ This may induce a competitor to devote resources to countering obsolete technologies and systems while diverting focus away from countermeasures against new systems in planning and development.

Case Study: Homing Overlay Experiment

The Homing Overlay Experiments, conducted in February 1983 and June 1984 as part of the U.S. missile defense program, represent a well-documented case of a demonstration. The tests investigated the ability of a kinetic missile-defense interceptor to hit a ballistic missile re-entry vehicle as it re-entered the atmosphere. The first three tests in the series failed due to mechanical problems but in the fourth test, officials reported that the interceptor had successfully homed in on, tracked, and destroyed the incoming target missile. The success appeared to show the first proof that defense against ICBMs was within reach.

In fact, the test series was part of a broader effort to deceive the Soviet Union as to U.S. progress in developing strategic defenses. The test’s directors planned to blow the missile up if the interceptor got close enough to it. However, they did not do so on the first three attempts because the interceptors were so wide of the mark. On the fourth, “successful,” test, they eliminated the self-destruct mechanism but illuminated the target to increase the chances that the interceptor’s infrared sensors would find it.⁹⁶

The deceptive element of the program was originally designed to prevent the Soviet Union from gathering accurate information about the U.S. strategic defense program. As it evolved, however, the program sought to force the Soviets into spending resources to build their own system and counter that of the United States.⁹⁷

94 Piotr Butowski with Jay Miller, *OKB MiG: A History of the Design Bureau and its Aircraft* (Stillwater, MN: Specialty Press, 1991), p. 106.

95 Kevin N. Lewis, *Getting More Deterrence Out of Deliberate Capability Revelation* (Santa Monica, CA: RAND Corporation, 1989), 33.

96 General Accounting Office, *Ballistic Missile Defense 3*.

97 Tim Weiner, “Lies and Rigged ‘Star Wars’ Test Fooled the Kremlin, and Congress”, *New York Times*, August 18, 1993.

The Defense Department discontinued the demonstration program for several reasons. First, it became apparent after the first two misses that it would be hard to portray the missile defense system as highly reliable. Second, the risk of Soviet discovery outweighed potential benefits: If the Soviets were to discover that the United States was bluffing, it would undermine the perception of U.S. technological superiority. Third, the expanding size and complexity of the SDI program made maintaining the program increasingly difficult. Fourth, the deception was difficult to manage bureaucratically. And finally, the deception program was seen as a drain on manpower that program managers felt could be better employed elsewhere.⁹⁸

The challenge of U.S. advanced technology nonetheless appears to have had a marked impact on Soviet leaders. In the words of Soviet Ambassador Anatoly Dobrynin, “[o]ur leadership was convinced that the great technical potential of the United States had scored again.” Soviet leaders “treated Reagan’s statement as a real threat.”⁹⁹ The memoirs and recollections of policymakers in Moscow confirm that they took Reagan seriously. An expensive competition in ballistic missile defenses appeared particularly unattractive to Soviet leaders, who were aware of the country’s economic difficulties. SDI also highlighted the Soviet Union’s lag in computers and microelectronics.¹⁰⁰

Today’s China represents a different type of competitor than the Soviet Union. The Soviet Union had an economy a fraction the size of that of the United States at the height of the Cold War and suffered from congenital economic and technological weaknesses. As a result, the United States could afford to stimulate competition with Moscow in individual areas that offered an unfavorable cost-exchange ratio for the United States and still win. It is unlikely that such an approach will succeed with China. Rather, in the current competition cost-exchange ratios need to favor the United States — and potentially be greatly in our favor — to succeed.

Nonetheless, the experience of the Cold War demonstrates that there are a number of ways to selectively disclose information on new capabilities to strategic advantage. Some include concealing information, while others involve revealing it. There is also a need to think beyond individual programs to consider the cumulative effect of releasing information. However, developing a strategy employing selective capability revelation needs to balance costs and benefits. That is the topic of the chapter that follows.

98 General Accounting Office, *Ballistic Missile Defense* 15.

99 Quoted in Jeremi Suri, “Explaining the End of the Cold War: A New Historical Consensus?,” *Journal of Cold War Studies* 4, no. 4 (Fall 2002): 65.

100 *Ibid.*, 66.

CHAPTER 4

Selective Disclosure: From Concept to Strategy

When should leaders conceal a capability? When, conversely, should they reveal a capability to strategic effect?

Several criteria suggest themselves.¹⁰¹ One consideration is the importance the competitor attributes to the capability. Is it likely, from the competitor's perspective, to alter the military balance in an unfavorable way? Or does its existence make little to no difference? For the United States, for example, the development of anti-submarine warfare or counter-stealth technologies would be particularly problematic. For China, by contrast, developments that would render obsolete its huge investment in ballistic missiles or interfere with its centralized command and control system would appear to be particularly disruptive.

A second consideration has to do with the competitor's bureaucratic response to the newly-revealed capability. A competitor's response will be shaped by an internal debate over the meaning, significance, and motivation of a revelation, by technical and time constraints, by the availability of resources and response options, among other considerations.¹⁰² To the extent that the competitor has a deeply rooted belief in U.S. technological superiority, such a perception is likely to magnify the impact of the revelation.

A third consideration is the speed with which a competitor can counter the capability. One of the main reasons for concealing a capability is to protect a perishable advantage. Those capabilities that can quickly be countered — such as electronic warfare and code-breaking techniques — have historically been among the most heavily protected secrets. Conversely,

¹⁰¹ See also Brendan Rittenhouse Green and Austin Long, "Conceal or Reveal? Managing Clandestine Military Capabilities in Peacetime Competition," *International Security* 44, no. 3 (Winter 2019/20): 60.

¹⁰² Kevin N. Lewis, *Getting More Deterrence Out of Deliberate Capability Revelation* (Santa Monica, CA: RAND Corporation, 1989), 15.

those capabilities that would take a long time for an adversary to counter, if at all, can confidentially be disclosed. Such an approach should take advantage of the constraints imposed by a competitor’s bureaucracy. For example, it might make sense to select capabilities to be revealed based upon their probable effect in exploiting areas of disagreement within the competitor’s acquisition system.

A fourth, related, consideration is the amount of effort a competitor would have to expend to counter the capability. Those capabilities that are relatively easy and cheap to counter should be protected, whereas those that require great effort to counter offer lucrative opportunities for imposing costs.

A fifth consideration has to do with how quickly and easily the state developing the capability can take the next step in the competition. A state that is agile and has a portfolio of options to field follow-on capabilities may want to disclose its activities, whereas one that faces barriers to subsequent action and few options may want to husband its options.

These criteria, combined with the above discussion, suggest several potentially fruitful opportunities for the United States to reveal or demonstrate new capabilities. Suggestive examples include the following:

- ***Reveal the existence of a capability that has already been developed and deployed.*** The primary benefit here would be to force competitors to re-assess the military balance and also create uncertainty as to what other deployed capabilities the United States possesses that have yet to be revealed. For example, it might make sense to reveal the ability to connect platforms, weapons, and sensors in novel and unexpected ways that create uncertainty and complicate an adversary’s planning.
- ***Reveal the existence of a novel concept of operations for employing existing capabilities.*** As above, the primary benefit of this approach would be to force competitors to boost their assessment of U.S. military effectiveness and enhance deterrence. For example, the development of AirLand Battle during the 1970s and 1980s had this at least one of its objectives.¹⁰³ It might make sense, for example, to employ multiple LRASM from a B-2 bomber to demonstrate the ability to rapidly strike naval targets in contested areas such as the Taiwan Strait. Similarly, it might make sense for bombers or UAS to demonstrate the ability to defend themselves against air-to-air threats.
- ***Suggest the development of a capability that doesn’t yet exist (or may not exist at all) to complicate enemy planning, undermine their confidence, and bolster deterrence.*** For example, it might make sense to suggest a breakthrough that would affect a key military balance, such as the relationship between offense and defense or hiding and finding. It might also make sense to suggest

¹⁰³ Thomas G. Mahnken, *Technology and the American Way of War Since 1945* (New York: Columbia University Press, 2008), pp. 129-130.

developments in areas of science and technology that are poorly understood to create uncertainty and impose costs.

- ***Reveal the existence of a capability that is further in its development than previously imagined.*** The primary benefit of this approach would be to compress the time dimension of competition and provoke a competitor's response in order to impose costs. For example, disclosing advances in autonomy, hypersonics, or directed energy might have such an impact.
- ***Reveal the existence of a capability that was developed, but is obsolete or a technological "dead end".*** The primary benefit of this approach would be to use previously "sunk costs" with little further utility to provoke a competitor's response in order to impose costs. For example, the Soviet Union periodically revealed its interest in Wing-in Ground (WIG) effects vehicles, though the area appears to have been a dead-end. It seems likely that the Defense Advanced Research Projects Agency (DARPA) and the Service laboratories likely have a stockpile of terminated projects that could be drawn upon for these purposes.
- ***Conceal several capabilities that are either more or less promising than previously imagined.*** The primary benefit of this approach would be to introduce uncertainty to a competitor about prioritizing responses, or add uncertainty about potential operational concepts that could be imagined, but may not be feasible for a long time.

CHAPTER 5

Conclusion

Several topics merit further exploration. First, it would be worthwhile to explore in depth historical case studies of the selective disclosure of information. Such case studies would likely reveal the barriers to purposely concealing or revealing capabilities. The former include the need to publicize a program's success in order to garner support and funding for it (particularly in democratic countries), the cost and hassle of security measures, and bureaucratic standard operating procedures. The latter include security considerations, fear of provoking a reaction from a competitor, as well as concern over the perishability of a capability.

Second, it would be worthwhile to explore in depth contemporary Chinese and Russian efforts to strategically disclose information about new capabilities. For example, the United States and its allies are the targets of Chinese influence operations through Beijing's efforts to reveal selectively new capabilities, such as the DF-21D ASBM. The PLA chose to reveal the DF-21D incrementally to sow doubt in the minds of its adversaries and yet has done so at a pace that has thus far avoided galvanizing the West. Understanding how Beijing and Moscow are using the selective disclosure of new capabilities can help the United States and its allies develop better strategies to compete. Studying competitors deeply may also help inject some healthy skepticism regarding purported capabilities that appear to be (and in fact may actually be) "too good to be true" to avoid the United States and its allies diverting their limited resources to countering these exaggerated threats.

Third, it would be useful to understand the behaviors we hope to induce in our competitors, and those we hope to avoid inducing. Where, in other words, could the selective disclosure of capabilities be used fruitfully, and where should it be avoided?

Fourth, it would similarly be useful to understand those things that our competitors are most concerned about in order to determine how best we can leverage those fears to induce the behavior we seek.

Finally, it would be worth exploring how concealing or revealing information could best serve as an element of a U.S. strategy to compete with China and Russia over the long term. What

capabilities should be protected to preserve their operational effectiveness? What capabilities that are currently concealed should be disclosed to enhance deterrence or provoke a response? What capabilities should the United States demonstrate to strategic effect? As part of this, it would be helpful to conduct an inventory of the stockpile of terminated programs that could be useful for selective disclosure. How, when, and in what ways should these and other capabilities be demonstrated to yield the greatest strategic effect?

Although the topic deserves greater study, some illustrative areas suggest themselves. It might be strategically advantageous for the United States if competitors:

- Believe we have a substantial capability to strike key targets. To that end, it might make sense to demonstrate combinations of platforms and weapons that would hold at risk and complicate the defense of high-value targets.
- Worry about the defense of key targets in their hinterlands, causing them to channel investment into territorial defense, thus diverting forces and investment from their periphery. To achieve that, it might make sense to demonstrate an increased capability to hold at risk more or a wider range of targets in an adversary's interior.
- Worry about the security of their nuclear deterrent, leading them to channel investment away from conventional forces into reinforcing their second-strike capability. As part of this, it might make sense to demonstrate the ability to hold at risk a competitor's strategic forces and nuclear command, control, and communications.

History suggests that it is possible to conceal or reveal capabilities selectively to strategic effect. That having been said, history also shows that there are barriers, particularly organizational, bureaucratic, and cultural ones, to purposeful strategic action. In practice, a program to conceal or reveal information for strategic effect would require several things. It would, for example, benefit from an understanding of a competitor's bureaucracy that is targeting the United States, as well as their state of knowledge of U.S. programs. Given our limited understanding of China and Russia today relative to the Soviet Union during the late Cold War, it would require a dedicated intelligence and analysis effort to develop the information necessary to assess decisions to reveal or conceal capabilities against the five criteria discussed above. It would also be important to develop channels to reveal capabilities that would be credible to the competitor. There would also need to be a framework for assessing the risks and costs of revealing new capabilities, to include a competitor's possible responses to the revelation. The effort would also require considerable coordination among a diverse set of bureaucratic actors. All are possible but will require effort to achieve, and in no way is success guaranteed.

LIST OF ACRONYMS

ARPA	Advanced Research Projects Agency
ASBM	Anti-Ship Ballistic Missile
ATB	Advanced Technology Bomber
BSAX	Battlefield Surveillance Craft, Experimental
CIA	Central Intelligence Agency
DARPA	Defense Advanced Research Projects Agency
FBI	Federal Bureau of Investigation
GSSAP	Geosynchronous Space Situational Awareness Program
ICBM	Intercontinental Ballistic Missile
IRBM	Intermediate Range Ballistic Missile
LPI/LPD	Low Probability of Intercept/Low Probability of Detection
LRASM	Long Range Anti-Ship Missile
NATO	North Atlantic Treaty Organization
PLA	People's Liberation Army
PLS	Palletized Load System
RCS	Radar Cross-Section
RIMPAC	Rim of the Pacific Exercise
SAM	Surface-to-Air Missile
SDI	Strategic Defense Initiative
SLBM	Submarine-Launched Ballistic Missile
UAS	Unmanned Aircraft Systems
UCAV	Unmanned Combat Aerial Vehicles
WIG	Wing-in Ground
XST	Experimental Survivable Airbed



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